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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/718,405	11/24/2000	Alexander R. Lyons	1263.1793	2862

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EXAMINER

CARTER, AARON W

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 05/06/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/718,405

Applicant(s)

LYONS ET AL.

Examiner

Aaron W Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 and 66-70 is/are pending in the application.
- 4a) Of the above claim(s) 35-65 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 6, 8, 11-17, 22, 24, 27-34 and 66-70 is/are rejected.
- 7) ☒ Claim(s) 2-5, 7, 9, 10, 18-21, 23 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-34 and newly added claims 66-70 in Paper No. 8 is acknowledged. The traversal is on the ground(s) that both inventions relate to the calculation of camera projections for images. This is not found persuasive because while both groups relate to the calculation of camera projections for images, both groups are still distinct inventions. Group I relates to calculating error and reducing error for camera projection of images through the use of 3-D image analysis, while Group 2 relates to calculating camera projections through the use of matching features.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

2. The information disclosure statements filed July 7, 2001 and August 21, 2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on four applications filed in the United Kingdom Nov. 25, 1999 and Aug. 3, 2000. It is noted, however,

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that applicant has not filed a certified copy of the four applications as required by 35

U.S.C. 119(b).

Specification

4. The disclosure is objected to because of the following informalities:

Each section is not clearly labeled, for example no distinction between the Background and Summary.

Appropriate correction is required.

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 30 and 70 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As to claims 30 and 70, the invention discloses non-functional descriptive material; please refer to the phrase on line 1 stating, "A signal conveying". A signal, per se, which is nothing more than an abstract idea, in order for the functionality of a data signal to be realized, it must be tangibly embodied on a "computer readable medium". Examiner suggests canceling claims 30 and 70.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 8, 11-17, 22, 24, 27-29, 31- 34 and 66-69 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,850,469 to Martin et al. ("Martin").

As to claims 1, 17, 29, 31-34 and 66-69, Martin discloses a method of processing input data defining (i) the positions of features in a sequence of images of at least one object which represent features on the object, (ii) an estimate of a respective camera projection for each image defining the projection of points on the object into the image, and (iii) 3D feature points comprising estimates of the positions in three-dimensions of features on the object represented by the features in the images, to generate output data defining further estimates of the camera projections, the method comprising processing respective subsets of the images in the sequence by:

calculating an error for the camera projections of the images in the subset (column 4, line 10-11, wherein subset is one image of the live feed) by projecting selected 3D feature points into the images in the subset using the camera projections of the images in the subset (column 4, lines 29-32) and determining the distance between the positions of the projected points and the positions of the corresponding features in the images (column 4, lines 33-36); and

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calculating changed positions for at least some of the selected 3D feature points and changed camera projections for the images in the subset by using the positions in the images in the subset of the features which correspond to the selected 3D feature points to determine changed positions for at least some of the selected 3D feature points and changed camera projections for the images in the subset which reduce the calculated error (column 4, lines 33-39, wherein the change in positions of the 3D features as well as a change in camera projections are calculated);

wherein the respective subsets of images are selected sequentially from the sequence so that each image in the sequence is processed in a subset at least once (column 4, line 10-11, wherein it is performed for each incoming image therefore each image is processed).

As to claims 6 and 22, Martin discloses a method according to claim 1, wherein the selected 3D feature points used to calculate an error comprise every 3D feature point which corresponds to a feature having a measured position in at least one of the images in the subset being processed (column 3, lines 29-30 and column 4, lines 30-31).

As to claims 8 and 22, Martin discloses a method according to claim 1, wherein each respective subset contains the same number of images (column 4, lines 10-11, wherein each subset comprises one image).

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As to claim 11, Martin discloses a method according to claim 1, further comprising the step of generating a signal conveying the further estimates of the camera projections (Fig. 2, element 33).

As to claim 12, Martin discloses a method according to claim 11, comprising the step of recording the signal either directly or indirectly (column 4, lines 37-39, wherein update corresponds to record).

As to claims 13 and 27, Martin discloses a method according to claim 1, further comprising the step of processing image data defining the images in the sequence to generate the input data (Abstract, lines 6-8).

As to claims 14 and 28, Martin discloses a method according to claim 1, further comprising the step of using the further estimates of the camera projections to generate data defining a 3D computer model of the scene in the images (column 4, lines 42-48).

As to claim 15, Martin discloses a method according to claim 14, further comprising the step of generating a signal conveying the 3D computer model (column 4, lines 42-48).

As to claim 16, Martin discloses a method according to claim 15, further comprising the step of recording the signal either directly or indirectly (column 4, lines 42-48).

Allowable Subject Matter

8. Claims 2-5, 7, 9, 10, 18-21, 23 and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,571,024 to Sawhney et al. discloses estimating and refining camera projections for images.

US Patent 5,870,099 to Horii et al. discloses estimating and refining camera projections for images.

US Patent 6,278,798 to Rao discloses estimating and refining camera projections for images.

US Patent 6,297,825 to Madden et al. discloses estimating and refining camera projections for images.

US Patent 6,348,918 to Szeliski et al. discloses estimating and refining camera projections for images.

US Patent 6,614,429 to Zhang et al. discloses estimating and refining camera projections for images.

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US Patent 6,628,819 to Huang et al. discloses estimating and refining camera projections for images.

US Patent 6,661,913 to Zhang et al. discloses estimating and refining camera projections for images.

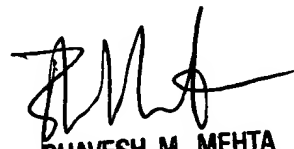
US Patent 6,664,956 to Erdem discloses estimating and refining camera projections for images.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W Carter whose telephone number is (703) 306-4060. The examiner can normally be reached on 7am - 3:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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